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Mary Cottrell, Secretary
Department of Telecommunications and Energy
One South Station – 2nd Floor
Boston, MA 02110

Re: D.T.E. 02-38
Investigation by the Department of Telecommunications and Energy on its
own Motion into Distributed Generation

Dear Secretary Cottrell:

Stone & Webster Consultants (“Stone & Webster”) appreciates the opportunity to respond to the Department of Telecommunications and Energy’s (“Department’s”) request for comments in this docket and supports the Department’s efforts in recognizing the importance of distributed generation.

Stone & Webster is a leader in providing technical and business solutions to the electric power industry. In addition, we have a long history of supporting technology development, demonstration, and commercialization of distributed generation.

Based on our extensive experience in the power industry, we believe it is important to address the development of business models that support the implementation of distributed generation applications, while looking at opportunities to coordinate this new market with the planning of transmission and distribution infrastructure.

The following initial comments are submitted by Stone & Webster in response to the questions from the Department in its June 13, 2002, Notice of Inquiry on distributed generation:

1. Q. Refer to current distribution company interconnection standards and procedures in Massachusetts. Do these standards and procedures act as a barrier to the installation of distributed generation? If so, please describe.

A. The current distribution company interconnection standards and procedures can potentially inhibit the development of distributed generation (“DG”) projects because they are not consistent among the distribution companies and, in some cases, can

result in conflicts with industry codes and standards. Statewide and national implementation of consistent technical standards will reduce application costs and development risk.

- a. Q. If the current standards and procedures act as barriers to the installation of distribution generation, please describe what steps the Department should take to remove these barriers. As part of this response, please discuss whether the Department should establish uniform technical interconnection standards and procedures for distributed generation.**

A. We understand that there is an initiative by all of the Massachusetts distribution companies to jointly prepare a single, consistent set of interconnection standards and procedures. We recommend that the Department encourage this initiative and support a public review and comment process that includes developers, equipment suppliers and other stakeholders. As has been done in other states, a consensus building process can then be undertaken to seek agreement. The Department or distribution companies should secure the services of an independent consultant with the necessary technical knowledge to assist in the discussion and consensus-building process as has been conducted in other state public utility commission proceedings.

- b. Q. Please comment on whether the Department should adopt the IEEE's uniform technical interconnection standards, or the uniform standards adopted by other states, for use in Massachusetts.**

A. It is likely that some or all of the IEEE uniform interconnection standards, when finalized, would be incorporated in the process of establishing uniform Massachusetts standards as described above. Adopting the IEEE standards by themselves would forego the important consensus-building process and may not address all of the key issues involved.

2. Q. Refer to current distribution company standby service tariffs. Do these tariffs act as a barrier to the installation of distributed generation? If so, please describe.

A. Standby rates, in concept, have a negative impact on DG economics. However, they reflect the fact that the distribution companies are obligated to supply power delivery capacity and reliability to customers, and these obligations require capital investments that must be recovered.

Distribution companies must make capital expenditures to upgrade and build new infrastructure to meet their current and projected future capacity delivery requirements. The distribution company assumes some risk in that projected load growth may not occur, threatening reduced energy delivery volumes and associated reduced revenues. Conversely, they benefit if increased energy volumes occur. Subsequent installation of DG can also reduce the energy delivery volume. Standby charges allow the recovery of the capital cost associated with providing distribution capability to that customer that may benefit from a new DG installation. The installation of a DG system that is not fully reliable causes customers to rely on distribution capacity provided by the distribution company which may not be utilized sufficiently to allow the investment in delivery capacity from being recovered through energy charges. The absence of standby charges would unfairly penalize distribution company shareholders and the remaining ratepayers in favor of those customers that obtain energy from a new DG system.

We believe that the value of a DG system should be related to its reliability and that the use of more reliable configurations (such as redundancy, energy storage, and better quality material selection) should be encouraged through competition with the need for standby charges to compensate for potential unavailability of the DG. Standby charges should, in many cases, reflect the opportunity for the distribution system to provide overall customer reliability more economically than certain DG system design alternatives. The use of standby charges, when justified, should represent the value of energy delivery capacity and system reliability provided by the distribution system when the DG installation is not capable of stand-alone reliable service.

a. Q. Please discuss the appropriate method for the calculation of standby or back-up rates associated with the installation of distributed generation. As part of this response, please discuss whether other states have established policies regarding back-up rates associated with distributed generation that may be appropriate for adoption in Massachusetts.

A. An accurate determination of the incremental cost of energy delivery and local reliability is likely to be very dependent upon the time and location, amount of capacity and other factors such as the uncertainty of load growth projections. Studies have been conducted to look at average infrastructure costs for various situations (see "Distribution System Cost Methodologies for Distributed

Generation," September 2001, The Regulatory Assistance Project) . A fair valuation process for standby charges should consider average power delivery costs adjusted for local conditions. We recommend that the distribution companies submit their recommendations regarding the basis for calculating standby charges and that their proposals be subjected to review and comment by stakeholders.

3. Q. Please discuss the role of distributed generation with respect to the provision of reliable, least-cost distribution service by the Massachusetts distribution companies.

Providing reliable least-cost distribution service to Massachusetts customers relies on evolving distribution planning techniques that are beginning to consider the role of DG as a planning option.

Traditional distribution planning considers load growth, replacement of aging equipment and cables, and identifies new capital improvements on a continuous or periodic planning cycle. The application of DG in very small increments can be addressed in load projections.

Second generation distribution planning concepts involve some initiative by the distribution planners to address the potential effectiveness of customer load response programs and DG to the extent they provide firm planning options that compete with traditional capital improvements. To date, such planning efforts are prototypical and very few cases have been publicized where distribution companies have successfully implemented these options. To be effective, these options may require some direct control of customer loads or DG facilities by the distribution company and the evolution of practical business models for DG projects that support the distribution company planning process.

Third generation distribution planning concepts can include the coordination of customer specific requirements such as sharing of backup emergency generation and onsite generation, coordination with cogeneration to satisfy thermal loads, and the evolution of minigrids and microgrids to share the benefits of larger numbers of DG installations. The practical integration of large amounts of DG is a longer term issue that will require considerable business and technical innovation by distribution companies and developers. The power distribution system design can add value to DG installations by allowing more effective utilization. In Massachusetts, this role has been undertaken by non-regulated energy supply companies that have worked directly with customers to compete with service provided by the distribution companies (e.g., the Medical Area Total Energy Facility - MATEP). In the long run, it may be advantageous to Massachusetts ratepayers for the distribution companies to

become more involved in the planning process of new development in certain areas to help coordinate the evolution of distribution system designs that offer enhanced sharing of special power quality, reliability, self-generation opportunities and the evolution of grid-based distribution system designs rather than traditional radial distribution systems. Current regulatory policies, economics of power delivery, and business planning by the distribution companies would have to change somewhat to support this level of planning.

Stone & Webster believes that DG can provide distribution planning options that, in some cases, can displace other distribution capital investments by deferring the need for certain improvements and upgrades. DG, possibly combined with load management techniques, can be used to provide firm capacity that can be secured by contract to the distribution company as an alternative to capital investments in new or upgraded facilities. A contract for firm capacity provided by a DG system, however, must provide sufficient availability and confidence to satisfy grid reliability obligations to avoid the need for other permanent improvements by the distribution company. In many cases, the cost of supplying power remotely, combined with the costs of distribution and reliable delivery of capacity across all load ranges, is less expensive than the costs associated with installing reliable DG. However, the values associated with local generation of power (which includes reduced transmission losses, potential reduction in future installation of transmission capacity, potential reduction in future installation of remote generation capacity, potential use of thermal cogeneration, potential coordination of customer backup generation, and other possible dynamic transmission and distribution system benefits) can substantially exceed just the potential for displaced capital investment considered by the distribution company. New business models and mechanisms to pass along some of these benefits to the developers of DG projects are needed.

a. Q. What steps should the distribution companies take in order to identify areas where the installation of distribution generation would be a lower-cost alternative to system upgrades and additions?

A. Stone & Webster believes that the distribution companies are already taking steps to consider locations for DG that have the potential for displacing traditional capital investments.. As part of the distribution planning process, we understand that distribution companies evaluate distributed generation as an alternative to system upgrades; however, none, as of date, have found this alternative to be cost effective within their planning perspective.

Stone & Webster believes that, through development of successful business models and an innovative approach of site banking, DG will have a better opportunity to be deployed. We are submitting a proposed initiative in cooperation with the Massachusetts distribution companies and Massachusetts Health and Education

Facilities Authority to the Massachusetts Renewable Energy Trust to promote the development of business models that provide a better appraisal of the economics of various conventional and renewable DG projects, considering the availability of various revenue streams and subsidies. In addition, this initiative seeks to identify several potential candidate sites, where DG might relieve congestion or can be used as an alternative to system upgrades. We believe this initiative will allow the distribution companies to demonstrate their approaches to considering DG in their planning process and obtain experience with business models and economics that transcend their planning limitations. We hope to present the Department with a copy of the proposed initiative as part of our reply comments.

b. Q. What steps should the distribution companies take to encourage the installation of cost-effective distributed generation in their service territories?

A. We believe each distribution company is developing its own planning approaches that consider DG options. This planning process is influenced by how they obtain revenue through rate structures and their perception of risk (i.e., the amount of confidence they can have in proper project implementation and long term commitments to maintain and reliably operate the DG systems compared to the confidence they have in installing and maintaining distribution assets in providing reliable service to customers).

Ultimately and once successful business models are developed (as discussed in comment 3a above), we believe that distribution companies will initiate DG development either through ownership or an open bidding process. In such a process, the distribution company will bid for and contract with developers to install and operate DG installations at specific locations and times, in accordance with carefully structured contracts that address technical and commercial issues that support practical short term implementation time frames and long term commitments for reliable service.

4. Q. What other issues are appropriate for consideration as part of the Department's investigation of distributed generation?

A. The roles of distribution companies to develop, own and operate DG should be addressed as part of the Department's investigation.

Stone & Webster believes there may be certain benefits to allow distribution companies to implement DG options directly, when DG can be used to resolve distribution constraints. distribution company ownership can avoid the need for establishing difficult and complex contractual arrangements for firm capacity and

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other interconnection and operational issues. Also, the timing of implementation can be better managed to respond to short term planning horizons, possibly using portable or movable DG installations that can be implemented prior to successive peak load periods.

The statute is unclear on this ownership issue in our view. One section of the statute seems to suggest that distribution companies desiring DG ownership must seek Department approval. See M.G.L. ch. 164 § 1A (b)(1). However, this section of the statute may only apply to "generating facilities" that have a capacity of greater than 100 megawatts. See M.G.L. ch. 164 § 69G. In addition, the definition for DG in another portion of the statute suggests that electric distribution companies are the appropriate entities for ownership, when alleviating the need to install new distribution facilities. (M.G.L. ch. 164 § 1 defines a "distributed generation facility" as a "a generation facility or renewable energy facility connected directly to distribution facilities or to retail customer facilities which alleviate or avoid transmission or distribution constraints or the installation of new transmission facilities or distribution facilities.")

Another issue that should be addressed is the possible recovery of certain DG costs in the rate base. If DG is used in avoiding the capital expenditure of a new or upgraded substation, the method of recovery in the rate base should be handled in the same manner as the recovery for new distribution facility. In the event that the distribution company does not own DG, the distribution company should also be allowed to recover the cost of the firm capacity contract with a DG owner. If there is no allowance for recovery in these instances, distribution companies will be discouraged from pursuing DG options. Thank you for the opportunity to present our comments.

Respectfully submitted,

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